VIAGGIO DI LEONARDO FEA
IN BIRMANIA E REGIONI VICINE

LII.

Concluding Report on the Reptiles and Batrachians obtained in Burma by Signor L. FEA, dealing with the Collection made in Pegu and the Karin Hills in 1887-88. By G. A. BOULENGER.

(*Plates* VII-XII).

Since the publication of my last Report on Signor Fea's herpetological collections (1), this excellent naturalist and enterprising traveller has returned home to Genoa with a further most valuable series of Reptiles and Frogs which the Marquis Doria has now again entrusted to me for description. As will be seen from the following list, the Karin Hills have not yielded many new Reptiles; it is among the Batrachians that Signor Fea has made the most interesting discoveries, conspicuous among them being the large *Leptobrachium* described as *L. carinense,* the handsome *Rhacophorus feae,* and the new genera *Chirixalus* and *Phrynoderma.* In addition to the eleven new species which are described in this Report, this collection has afforded much valuable material to supplement our knowledge of Burmese Reptiles and Batrachians and their distribution.

A brief account of Signor Fea's expedition, with maps showing the position of the localities mentioned in this Report, has been given by D.r Vinciguerra in the introduction to his most valuable

(1) Ann. Mus. Civ. Genova (2) VI, 1888, p. 593.

account of the Fishes (1), to which I must refer the reader for the geographical information.

Following D.r Vinciguerra's example, I append a complete list of all the Reptiles and Batrachians collected in Burma by Signor Fea, the names of the new species being preceded by an asterisk. Their distribution is indicated by crosses in the four columns which refer to the principal districts where the collections were made. Some changes have had to be made in the nomenclature, to bring it into accordance with the latest systematic works on the subject; but I have in every case inserted, in parentheses, the specific name under which the animals have appeared in my previous lists published in these Annals.

(1) Ann. Mus. Civ. Genova (2) IX. 1890, p. 129.

		Upper Burma	Karin Hills	Pegu	Tenasserim
	Cl. REPTILIA				
	Ord. CHELONIA.				
	Fam. Platysternidae.				
1.	Platysternum megacephalum, *Gray*.	....	+	....	+
	Fam. Testudinidae.				
2.	Batagur baska, *Gray*	....	....	+	....
3.	Kachuga trivittata, *D. & B.*	+	....	....	....
4.	Morenia berdmorii, *Blyth*	....	....	....	+
5.	Nicoria trijuga, *Schw.*	+	+	....	....
6.	Cyclemys dhor, *Gray*.	....	....	....	+
7.	Testudo emys, *Schl. & Müll.*	....	+	....	....
8.	Testudo elongata, *Blyth*	+	....	+	....
	Fam. Trionychidae.				
9.	Trionyx formosus, *Gray*	+	....	....	+
10.	Emyda scutata, *Ptrs.*	+	....	+	....
	Ord. SQUAMATA.				
	Subord. LACERTILIA.				
	Fam. Geckonidae.				
11.	Gymnodactylus pulchellus, *Gray*.	....	....	....	+
* 12.	» feae, *Blgr.*	....	+	....	....
* 13.	» peguensis, *Blgr*	....	....	+	....
14.	Hemidactylus frenatus, *Schl.*	+	+	+	....
15.	» gleadovii, *Murr.*	+	....	+	....
16.	» bowringii, *Gray*	+	....	+	....
17.	» garnotii, *D. & B.*	+	+	+	+
18.	» platyurus, *Schn.*	+	....	+	....
19.	Gehyra mutilata, *Wgm.*	+	....	....	....
20.	Lepidodactylus ceylonensis, *Blgr.*	....	....	+	....
21.	Gecko verticillatus, *Laur.*	+	....	+	+
22.	Ptychozoon homalocephalum, *Crev.*	....	....	+	....
	Fam. Agamidae.				
23.	Draco maculatus, *Gray*	+	+	+	....
24.	» blanfordii, *Blgr.*	....	....	....	+
25.	» taeniopterus, *Gthr.*	....	....	....	+

		Upper Burma	Karin Hills	Pegu	Tenasserim
26.	Acanthosaura crucigera, *Blgr.*	....	....	....	+
27.	» lamnidentata, *Blgr.*	....	+	....	+
28.	» kakhienensis, *And.* (Calotes feae, *Blgr.*)	....	+	....	+
*29.	Calotes microlepis, *Blgr.*	....	....	....	+
30.	» versicolor, *Daud.*	+	+	+	+
31.	» emma, *Gray*	....	+	+	+
32.	» mystaceus, *D. & B.*	+	+	+	+
33.	Liolepis belii, *Gray*	....	....	....	+
	Fam. Anguidae.				
34.	Ophisaurus gracilis, *Gray*	+	....	....	....
	Fam. Varanidae.				
35.	Varanus bengalensis, *Daud.*	+	....	....	....
36.	» nebulosus, *Gray*	....	+	+	+
37.	» salvator, *Laur.*	+	....	....	+
	Fam. Lacertidae.				
38.	Tachydromus sexlineatus, *Daud.*	+	....	....	....
	Fam. Scincidae.				
39.	Mabuia multifasciata, *Kuhl.*	+	+	+	+
40.	» macularia, *Blyth*	+	+	+	+
*41.	» quadricarinata, *Blgr.*	+	....	....	....
42.	Lygosoma indicum, *Gray* (zebratum, *Blgr.*)	+	+	....	+
43.	» maculatum, *Blyth*	+	+	+	+
44.	» olivaceum, *Gray*	....	....	+	....
*45.	» kakhienense, *Blgr.*	+	....	....	....
*46.	» melanostictum, *Blgr.*	....	+	+	+
*47.	» doriae, *Blgr.*	+	....	....	....
48.	» bowringii, *Gray*	....	....	+	....
49.	» cyanellum, *Stol.* (feae, *Blgr.*)	....	....	+	....
50.	» anguinum, *Theob.*	....	....	+	....
*51.	» punctatolineatum, *Blgr.*	....	+	....	....
52.	Tropidophorus berdmorii, *Blyth.*	....	....	....	+
53.	» yunnanensis, *Blgr.*	+	+	....	....
	Subord. OPHIDIA.				
	Fam. Typhlopidae.				
54.	Typhlops braminus, *Daud.*	+	....	....	....
55.	» diardi, *Schleg.* (horsfieldii, *Gray*)	+	+	+	....

		Upper Burma	Karin Hills	Pegu	Tenasserim
	Fam. Boidae.				
56.	Python molurus, *L.*	+	+	....	....
	Fam. Ilysiidae.				
57.	Cylindrophis rufus, *Laur.*	+	....	....	....
	Fam. Xenopeltidae.				
58.	Xenopeltis unicolor, *Reinw.*	+	....	....	....
	Fam. Colubridae.				
59.	Polyodontophis collaris, *Gray*	+	+	....	+
60.	Tropidonotus parallelus, *Blgr.* (dipsas. *And.* nec *Blyth*)	+	....	....	....
61.	» khasiensis, *Blgr.*	....	+	....	....
62.	» modestus, *Gthr.*	....	+	....	....
63.	» piscator, *Schn.* (quincunciatus, *Schleg.*)	+	+	+	+
64.	» platyceps, *Blyth*	+	....	....	....
65.	» himalayanus, *Gthr.*	+	....	....	....
66.	» stolatus, *L.*	+	....	....	....
67.	» nigrocinctus, *Blyth*	....	+	....	....
68.	» subminiatus, *Schleg.*	+	+	+	+
69.	» chrysargus, *Schleg.* (junceus, *Cant.*)	....	....	....	+
70.	Pseudoxenodon macrops, *Blyth* (Tropidonotus macrophthalmus, *Gthr.*)	+	+	....	....
71.	Trirhinopholis nuchalis, *Blgr.*	....	+	....	....
72.	Lycodon aulicus, *L.*	+	+	+	....
73.	» fasciatus, *And.*	+	....	....	....
74.	Dinodon septentrionalis, *Gthr.*	....	+	....	....
75.	Zaocys nigromarginatus, *Blyth.*	+	....	....	....
76.	» carinatus, *Gthr.*	....	+	....	....
77.	Zamenis korros, *Schleg.*	+	....	+	....
78.	» mucosus, *L.*	+	....	....	....
79.	Simotes cyclurus, *Cant.* (bicatenatus, *Gthr.*)	+	....	+	....
80.	» violaceus, *Cant.*	....	+	....	....
81.	» theobaldi, *Gthr.*	+	....	....	....
82.	» cruentatus, *Gthr.*	....	....	+	....
83.	» torquatus, *Blgr.*	+	....	....	....
84.	Ablabes stoliczkae, *W. Sclater*	....	+	....	....
85.	» doriae, *Blgr.*	+	....	....	....
86.	Coluber porphyraceus, *Cant.*	+	+	....	....

		Upper Burma.	Karin Hills	Pegu	Tenasserim
87.	Coluber radiatus, *Schleg.*	+	+	+	+
88.	» prasinus, *Blyth* (gramineus, *Gthr.*)	+	+	....	....
89.	Dendrophis pictus, *Gm.*	+	+	+	....
* 90.	» subocularis, *Blgr.*	+	....	....	....
91.	Dipsas multimaculata, *Schleg.*	+	....	....	+
92.	» kexagonotus, *Blyth.* (ochracea, *Theob.*)	+	....	....	....
93.	» cynodon, *Cuv.*	....	....	+	....
94.	» cyanea, *D. & B.*	....	....	+	....
95.	Psammodynastes pulverulentus, *Boie*	+	+	+	+
96.	Dryophis prasinus, *Boie*	+	+	....	....
97.	» mycterizans, *Daud.*	+	....	....	....
98.	Chrysopelea ornata, *Shaw.*	+	....	+	....
99.	Homalopsis buccata, *L.*	....	....	+	....
100.	Hypsirhina enhydris, *Schn.*	....	....	+	....
101.	Callophis macclellandii, *Reinh.*	+	+	....	....
102.	Adeniophis bivirgatus, *Boie*	....	....	+	....
103.	Bungarus fasciatus, *Schn.*	+	....	....	+
104.	» semifasciatus, *Kuhl.*	+	....	....	....
105.	» caeruleus, *Schn.*	....	+	....	....
106.	Naia tripudians, *Merr.*	+	+	....	....
107.	» bungarus, *Schl.* (elaps, *Gthr.* nec *Schl.*)	+	....	+	....
108.	Hydrophis gracilis, *Shaw.*	....	....	+	....
	Fam. Amblycephalidae.				
* 109.	Amblycephalus andersonii, *Blgr.*	+	....	....	....
	Fam. Viperidae.				
* 110.	Azemiops feae, *Blgr.*	+	....	....	....
111.	Trimeresurus monticola, *Gray*	+	+	....	....
112.	» gramineus, *Shaw.*	+	+	+	+
	Cl. BATRACHIA.				
	Ord. ECAUDATA				
	Fam. Ranidae.				
1.	Oxyglossus lima, *Gravh.*	+	....	+	+
2.	» laevis, *Gthr.*	+	....	+	+
3.	Rana kuhlii, *D. & B.*	+	+	....	+
* 4.	» doriae, *Blgr.*	....	+	+	+
5.	» limborgii, *W. Sclater*	....	+	....	....
6.	» macrodon, *D. & B.*	....	+	....	+
7.	» tigrina, *Daud.*	+	....	+	+

		Upper Burma	Karin Hills	Pegu	Tenasserim
8.	Rana limnocharis, *Boie* (gracilis, *Wgm.*)	+	+	+	+
* 9.	» feae, *Blgr.*	+	....	....	....
10.	» tenasserimensis, *W. Sclater*	....	+	....	....
11.	» andersonii, *Blgr.*	+	....	....	....
12.	» guentheri, *Blgr.*	....	+	....	....
* 13.	» lateralis, *Blgr.*	....	....	+	+
14.	» nigrovittata, *Blyth*	....	+	....	....
15.	» macrodactyla, *Gthr.*	+	....	+	+
16.	» erythraea, *Schleg.*	+	....	+	+
* 17.	» humeralis, *Blgr.*	+	....	....	....
18.	» granulosa, *And.*	....	+	+	....
19.	» alticola, *Blgr.*	....	....	....	+
20.	» jerboa, *Gthr.*	....	+	....	....
21.	» livida, *Blyth*	....	+	....	+
22.	» latopalmata, *Blgr.* (afghana, *Gthr.*)	+	+	....	+
23.	Rhacophorus leucomystax, *Gravh.* (maculatus, *Gray*)	+	+	+	+
* 24.	» verrucosus, *Blgr.*	....	+	....	....
* 25.	» feae, *Blgr.*	....	+	....	....
26.	» bimaculatus, *Blgr.*	....	+	....	....
* 27.	Ixalus carinensis, *Blgr.*	....	+	....	....
* 28.	» parvulus, *Blgr.*	....	+	....	....
* 29.	» vittatus, *Blgr.*	+	+	....	....
30.	» asper, *Blgr.*	....	+	....	....
* 31.	Chirixalus doriae, *Blgr.*	....	+	....	....
* 32.	Phrynoderma asperum, *Blgr.*	....	+	....	....
	Fam. Engystomatidae.				
33.	Calophrynus pleurostigma, *Tsch.*	+	....	+	....
34.	Microhyla inornata, *Blgr.*	....	....	+	....
35.	» ornata, *D. & B.*	+	+	+	+
36.	» berdmorii, *Blyth*	....	+	....	....
37.	Callula pulchra, *Gray*	+	....	+	+
* 38.	» macrodactyla, *Blgr.*	....	....	....	+
	Fam. Dyscophidae.				
39.	Calluella guttulata, *Blyth*	....	....	....	+
	Fam. Bufonidae.				
* 40.	Bufo macrotis, *Blgr.*	+	....	+	....
41.	» melanostictus, *Schn.*	+	+	+	+

		Upper Burma	Karin Hills	Pegu	Tenasserim
42.	Bufo parvus, *Blgr.*	....	....	+	....
43.	» biporcatus, *Gravh.*	....	....	....	+
44.	» asper, *Gravh.*	....	+	....	+
	Fam. Hylidae.				
45.	Hyla annectens, *Jerd.*	+	+	....	....
	Fam. Pelobatidae.				
46.	Leptobrachium monticola, *Gthr.*	....	+	....	....
*47.	» parvum, *Blgr.*	....	+	....	....
*48.	» pelodytoides, *Blgr.*	....	+	....	....
49.	» hasseltii, *Tsch.*	....	+	....	....
*50.	» carinense, *Blgr.*	....	+	....	....
*51.	» feae, *Blgr.*	+	....	....	....
	Ord. CAUDATA.				
	Fam. Salamandridae.				
52.	Tylototriton verrucosus, *And.*	+	....	....	....
	Ord. APODA.				
	Fam. Caeciliidae.				
53.	Ichthyophis glutinosus, *L.*	+	+	....	....

REPTILIA.

CHELONIA.

Platysternidae.

1. **Platysternum megacephalum,** Gray.

Karin Hills, district of the Bia-po or Chebà, 3000 feet.

A large male specimen, shell measuring 170 millim., head 63, tail 220. A well-developed, rhomboidal intergular shield is present between the gulars and the humerals.

Testudinidae.

2. **Nicoria trijuga**, Schw.

Foot of the Karin Hills, East of Toungoo.

3. **Testudo emys**, Schleg & Müll.

Thao, village in the Karin Hills, district of the Ghecù, 3200-4500 feet.

A shell, 220 millim. long, and two young in spirit, measuring 120 and 110 respectively. The shell agrees very closely in form and colour with the type of *Geoemyda impressa*, which I have previously referred to *Testudo emys*. This view receives confirmation from the young specimens which, although very much depressed and with strongly serrated anterior and posterior borders of the carapace, have the temporal arch, alveolar ridges, cephalic shields, and limbs of a *Testudo*. In all three specimens, the pectoral shields meet and form a suture on the middle line. A very strong conical tubercle is present on the back of the thigh. The anal shields are distinct; I mention this because D.r Boettger has recently (Ber. Offenb. Ver. Nat. 1892, p. 102) described a specimen from Camboja in which they are fused into one. The shell, in the young specimens, is of a pale yellowish brown, the carapace vermiculated or dotted all over with blackish; upper surface of head yellowish, dotted with blackish.

4. **Testudo elongata**, Blyth.

Palon (Pegu).

Trionychidae.

5. **Emyda scutata**, Peters.

Palon.

LACERTILIA.

Geckonidae.

6. **Gymnodactylus feae**, sp. n.

(*Pl.* VII, *fig.* 1)

Puepoli, village in the district of the Karin Bia-po, 3200-3400 feet. A single specimen.

Head large, oviform; snout longer than the orbit, which equals its distance from the ear-opening; forehead and loreal region concave; ear-opening small, oval, oblique. Limbs elongate; digits strong, scarcely depressed at the base, strongly compressed distally; the basal phalanx with well-developed plates beneath. Head granular, the granules intermixed with small round tubercles from between the eyes to the nape, where they increase in size; rostral twice as broad as deep, with median cleft above; rostral and first labial entering the nostril; seven or eight upper and eight or nine lower labials; mental triangular; two pairs of chin-shields, anterior largest and forming a suture behind the mental; throat minutely granulate. Body and limbs granular above, with numerous small, round, keeled tubercles; a series of small tubercles, on a slight fold, limiting the abdominal region; ventral scales small, cycloid, imbricate, 35 across the middle of the belly. Male with a continuous series of 32 pores along the thighs and across the praeanal region. Tail cylindrical, tapering, covered with minute granules intermixed with a few large flat, smooth tubercles, which do not form regular rings, except quite at the base; a series of large transverse plates below. Dark brown above, with four black bars, bordered with white tubercles, on the back, and a crescentic black, white-edged band from eye to eye across the nape; upper surface of head with large black spots, separated by a whitish

network; lower parts dark brown; tail black, with nine white cross-bands above.

Total length	97 millim.
Head	15
Width of head	9
Body	32
Fore limb	20
Hind limb	25
Tail	50

I have not been able to refer this Lizard to any of the described species. In its femoral pores it agrees with *G. variegatus*, Blyth, which differs, according to Blyth's description, in the larger ventral scales and other points of minor importance.

7. **Gymnodactylus peguensis**, sp. n.

(*Pl.* VII, *fig.* 2).

Palon, two specimens.

Head large, oviform; snout longer than the orbit, which equals its distance from the ear-opening; forehead and loreal region concave; ear-opening subtriangular, rather large, half the diameter of the eye. Limbs moderate; toes short, scarcely depressed at the base, strongly compressed distally; the plates under the basal phalanx small, much narrower than the digit, roundish, convex. Head granular, with minute tubercles scattered on the occiput; rostral twice as broad as deep, with median cleft above; nostril pierced between the rostral and four scales; first labial excluded from the nostril; nine upper and seven or eight lower labials; mental triangular; four pairs of chin-shields, the median largest and forming a suture behind the mental; throat minutely granulate. Body and limbs granulate above, with numerous small, round, keeled tubercles; a feeble fold along the side; ventral scales small, cycloid, imbricate, 43 to 45 across the middle of the belly. An angular series of seven or eight praeanal pores; no femoral pores. Tail cylindrical tapering, as long as head and body. Pale grey-brown above, with blackish brown

markings edged with whitish, viz. several spots on the top of the head, a U-shaped band from eye to eye across the nape, two series of large dorsal spots and a series of smaller spots along each side; lower parts whitish.

Total length	128 millim.
Head	18
Width of head	12
Body	6
Fore limb	2
Hind limb	28
Tail	64

Nearest allied to *G. rubidus*, Blyth, from the Andamans, but differing in the less pointed snout, the larger ear-opening, the distinctly keeled dorsal tubercles, and the absence of praeanal groove.

8. **Hemidactylus frenatus**, D. & B.

Rangoon, Malewoon, Toungoo, Palon, District of the Karin Bia-po.

9. **Hemidactylus bowringii**, Gray.

Palon.

Males with 12 to 15 praeanal pores. The type specimens of this species probably came from China. The British Museum has recently received a specimen obtained at Hong Kong by M.r J. J. Walker.

10. **Hemidactylus garnoti**, D. & B.

Palon, Thao, District of the Karin Bia-po.

Males with 14 to 16 pores under each thigh.

11. **Hemidactylus platyurus**, Schn.

Malewoon (South Tenasserim).

12. **Lepidodactylus ceylonensis**, Blgr.

Malewoon. A single specimen.

This species, first described from a single specimen collected by Col. Beddome at Gampola, Ceylon, is now represented in the British Museum by four more specimens, viz. : — Two from Gampola, 2000 feet, presented by M.r E. E. Green; one from the Willis Mountains, Java, 5000 feet, collected by Baron von Huegel; and one from Engano, collected by D.r Modigliani and sent to me for identification by the Marquis Doria together with a specimen of *Gonatodes kandianus* from the same island. These two Geckos have since been recorded by D.r Vinciguerra in his paper on the Reptiles of Engano, Ann. Mus. Civ. Genova, (2) XII, 1892, pp. 517-526.

13. **Gecko verticillatus**, Laur.

Rangoon.

14. **Ptychozoon homalocephalum**, Crev.

Palon.

A single male specimen, with 24 praeanal pores, is in every way typical except in the absence of enlarged dorsal tubercles. The presence of these tubercles can therefore not be included among the diagnostic characters by which this species is to be distinguished from the *P. horsfieldii*, Gray, recently restored to specific rank by D.r F. Müller, Festschr. Nat. Ges. Basel, 1892, p. 209, pl. IV.

Agamidae.

15. **Draco maculatus**, Gray.

Malewoon, Thao, and in the district of the Karin Bia-po.

16. **Acanthosaura lamnidentata**, Blgr.

Yado, valley in the district of the Karin Asciuii Cheba 3500 feet; Thao; Cobapo, village in the district of the Karin Bia-po.

The numerous specimens procured by Signor Fea remove my doubts as to the specific distinctness of this form from the allied *A. crucigera*. In the following table I have recorded, in millimetres, the length of the supraciliary, supratemporal, and longest nuchal spines, as compared with the diameter of the orbit, in all the adult and half-grown specimens of *A. crucigera* and *lamnidentata* at present before me.

			Diam. of orbit	Supra-cil. spine	Supra-temp. spine	Nuchal spine
A. crucigera	♂	Tavoy	10	5	4	6
» »	♀	»	9	4	4	6
» »	♀	»	11	7	5	10
» »	♀	»	11	6	5	6
» »	♀	Moulmein	8	4	3	5
A. lamnidentata	♂	Pegu	10	3	3	3
» »	♀	Tenasserim	8	3	2	3
» »	♂	Yado	10	2	2	4
» »	♀	»	11	3	3	4
» »	♀	»	10	3	3	3
» »	♀	Bia-po	11	3	3	4
» »	♀	»	10	3	3	4
» »	♀	»	9	2	2	3
» »	♀	»	8	2	2	3
» »	♀	Thao	9	1 ½	2	3
» »	♂	Cobapo	8	1	2	3

17. **Acanthosaura kakhienensis.**

Oriocalotes kakhienensis, Anders. An. Zool. Res. Yunn., p. 806, pl. LXXVI, fig. 1 (1879).

Acanthosaura kakhienensis, Bouleng. Cat. Liz. I, p. 305 (1885), and Faun. Ind., Rept. p. 127 (1890).

Calotes feae, Bouleng. Ann. Mus. Civ. Genova (2) V, 1887, p. 477, pl. VI, and fig. 2, Faun. Ind., Ind. Rept., p. 143.

Yado: An adult male. Thao: A half-grown male.

Now that I am acquainted with the male of this Lizard, I must regard my *Calotes feae*, described from a single female specimen from Pla-po, N. Tenasserim, 3300-3600 feet, as identical with Anderson's *Oriocalotes kakhienensis*, founded on a male specimen from Ponsee, in the Kakhyen Hills.

The adult male measures: —

Total length	377 millim.
Head	37
Width of head	21
Body	90
Fore limb	50
Hind limb	80
Tail	250

Head large and elongate, with strongly swollen checks, which are covered with large smooth scales forming regular longitudinal and transverse series. The small spinose tubercle between the tympanum and the nuchal crest, which is present in the type of *Calotes feae* and apparently absent in the type of *Oriocalotes kakhienensis,* is well developed in the large specimen and very indistinct in the small one. No gular sac. Nuchal crest well developed, formed of about 12 spines, the longest of which equal the diameter of the tympanum. 70 scales round the middle of the body; ventral scales smaller than gulars. Fourth toe a little longer than third. Tail compressed, with a serrated crest at the base. Three broad brown cross-bands on the back, tapering on the flanks; the head and body entirely spotted with black except on the interspace between the second and third dorsal bands, which forms a uniform greenish white zone; limbs with regular dark cross-bars; chin and sides of belly spotted with black; the markings on the sides of the head as figured in *Calotes feae.*

The British Museum has lately received a young specimen of this species, obtained by M.r Oates at Toungyi, in the Southern Shan States.

18. **Calotes cristatellus**, Kuhl.

Malewoon.

19. **Calotes versicolor**, Daud.

Rangoon, Toungoo, Palon, Thao, Yado, Chialla, in the district of the Karin Asciuii Ghecù, 1300-1400 m. District of the Karin Bia-po.

20. **Calotes emma**, Blyth.

Malewoon, Thao, Yado, District of the Karin Bia-po.

21. **Calotes mystaceus**, D. & B.

Chialla.

Varanidae.

22. **Varanus nebulosus**, Gray.

Malewoon, Palon, District of the Karin Bia-po.

Scincidae.

23. **Mabuia macularia**, Blyth.

Palon, Thao, District of the Karin Bia-po.

24. **Mabuia multifasciata**, Kuhl.

Malewoon, Yado, Bia-po.

25. **Lygosoma indicum**, Gray.

Yado, Thao, District of the Karin Bia-po.

32 to 36 scales round the middle of the body. Some specimens with black vertical bars on the sides, others without any. I therefore now regard *L. zebratum*, Blgr., as a variety of *L. indicum*.

I may add that the British Museum has recently received specimens from Southern China, obtained by M.r J. J. Walker, of H. M. S. 'Penguin,' on Tung-Yung Island. These specimens have 34 or 36 scales round the body. A specimen purchased of M.r Cuming as from near Ning-po (Spec. *e* of the B. M. Catalogue of Lizards) has been for many years in the Museum.

26. **Lygosoma maculatum**, Blyth.

Malewoon, Palon, District of the Karin Bia-po.

36 to 40 scales round the middle of the body.

27. **Lygosoma olivaceum**, Gray.

Malewoon.

28. **Lygosoma melanostictum**, Blgr.

Palon, Thao, Yado, District of the Karin Bia-po.

32 or 34 scales round the middle of the body. In one specimen, the frontonasal touches the frontal.

29. **Lygosoma bowringii**, Gray.

Malewoon. Two specimens.

New to Burma. Was on record from Hong Kong and Singapore.

30. **Lygosoma cyanellum**, Stol.

Rangoon, Palon. Numerous specimens.

This Lizard varies much in the elongation of the body, and I must therefore withdraw *L. feae*, which was founded on a single example with comparatively short body. The length from end of snout to fore limb is contained from two to three times, the four limb four to six times, and the hind limb three to four times in the length from axilla to groin. Specimens from Moulmein, presented by M.r Oates, show that the frontoparietals may be occasionally fused to a single shield.

31. **Lygosoma anguinum**, Theob.

Rangoon, Palon.

Length from end of snout to fore limb twice and a half to three times, fore limb six and a half to eight times, hind limb four and a half to five and a half times in distance from axilla to groin. Half-grown and young with dark lines running between the series of scales, as in *L. lineatum*, Gray.

32. **Lygosoma punctatolineatum**, sp. n.

Bia-po. A single specimen.

Section *Homolepida*. Body much elongate, limbs weak; the distance between the end of the snout and the fore limb is contained once and three fourths in the distance between axilla and groin. Snout short, obtuse. Lower eyelid scaly. Nostril pierced in the nasal; no supranasal; frontonasal broader than long, forming a broad suture with the nasal and a narrow one with the frontal; latter shield a little longer than the fronto-parietals, which are distinct and a little larger than the inter-parietal; four supraoculars, first and second in contact with the frontal; seven supraciliaries; parietals in contact behind the interparietal; no enlarged nuchals; fourth, fifth and sixth labials below the eye. Ear-opening roundish, moderately large, smaller than the eye-opening; no auricular lobules. 24 smooth scales round the middle of the body. A pair of enlarged praeanals. The length of the hind limb equals the distance between the anterior border of the eye and the fore limb; third and fourth toes equal, with 11 smooth lamellae beneath. Tail long and thick (imperfect in the single specimen). Pale brownish above, with rows of small dark dots along the series of scales; a blackish lateral line from the nostril to the base of the tail, passing through the eye and above the ear.

From snout to vent	millim.	36
Head	»	7
Width of head	»	4
Fore limb	»	6.5
Hind limb	»	8

33. **Tropidophorus yunnanensis**, Blgr.

District of the Karin Bia-po.

Scales in 32 or 34 rows, dorsals smooth or faintly keeled.

OPHIDIA.

Typhlopidae.

34. **Typhlops diardi,** Schleg. (*horsfieldii*, Gray).

Malewoon, District of the Karin Bia-po.

Boidae.

35. **Python molurus,** L.

District of the Karin Bia-po.

Colubridae.

36. **Polyodontophis collaris,** Gray.

District of the Karin Bia-po.

A single, somewhat aberrant specimen. Nine upper labials, third, fourth, and fifth entering the eye. Ventrals 168. In addition to the outer series of black dots, two series of minute dots run along the whole length of the belly.

37. **Tropidonotus khasiensis,** Blgr.

Thao. A single specimen.

Agrees in every respect with the type specimens from the Khasi Hills.

38. **Tropidonotus modestus,** Gthr.

Thao, District of the Karin Bia-po. Two specimens.

Both specimens with two prae- and two postoculars.

39. **Tropidonotus piscator,** Schn.

Yado.

40. **Tropidonotus nigrocinctus,** Blyth.

Thao: One adult ♀ (V. 164; C. 87). District of the Karin Bia-po: One young (V. 164; C. 88).

M.r W. L. Sclater (Journ. As. Soc. Beng. Lx. 1891, p. 239) has drawn attention to the variations in the temporal scutellation of this Snake. The two examples obtained by Signor Fea differ from the two in the British Museum in having two superposed anterior temporals. A singe praeocular and three or four post-oculars. Young with a broad pure white occipital collar edged with black in front and behind.

41. **Tropidonotus subminiatus**, Schlg.

Toungoo, Thao, District of the Karin Bia-po.

42. **Pseudoxenodon macrops**, Blyth.

District of the Karin Bia-po. A single specimen.

43. **Trirhinopholis nuchalis**, Blgr.

District of the Karin Bia-po. Three specimens.

At the close of last year, the British Museum received, among other Reptiles collected at Toungyi, in the Southern Shan States, by M.r E. W. Oates, a single specimen representing a new genus of Snakes which I described under the above name in the first volume of the Catalogue of Snakes (p. 419, pl. XXVIII, fig. 1). Signor Fea's collection contains three specimens of the same Snake; they differ from the type in the higher number of ventral shields:

1. ♀.	Ventral	143,	subcaudals	26
2. ♀.	»	140,	»	24
3. Yg.	»	139,	»	22.

In the young, the arrow-headed nuchal marking is deep black, bordered with yellowish behind, and the belly is coral-red with two longitudinal series of transverse black spots, as often occurs in *Coronella girondica*. The belly may be dotted all over with black, in addition to the large spots, and the back either of a dark purplish brown or reddish brown with darker brown blotches and small black spots.

44. **Lycodon aulicus**, L.

Rangoon, Palon, Malewoon.

45. **Dinodon septentrionalis**, Gthr.

District of the Karin Bia-po: one adult specimen (V. 213; C.?). Cobapo: one half-grown specimen (V. 210; C. 87).

In the half-grown specimen, the dorsal scales are faintly keeled on the posterior part of the body, whilst in the adult they are all perfectly smooth. In all other respects agreeing with the type specimen, received from the late D.r Jerdon without indication of the locality, which was supposed to be probably the Himalayas or the Khasi Hills.

46. **Zaocys carinatus**, Gthr.

District of the Karin Bia-po. A single specimen.

Differs from the types in having but eight upper labials, fourth and fifth entering the eye. Three loreals. Scales in 16 rows. Ventrals 209; subcaudals 117.

47. **Zamenis korros**, Schleg.

Malewoon.

48. **Simotes cyclurus**, Cant.

Palon, District of the Karin Bia-po.

♂ (Palon). Sc. 19; V. 176; C. 44. Brown above, with mere traces of darker stripes; belly with two longitudinal series of brown spots.

♂ (Bia-po). Sc. 21; V. 189; C. 58. Four dark brown stripes along the back, the middle pair four scales wide and separated by the vertebral series, the outer pair a mere line; belly yellow, with a few brown dots posteriorly.

Half-grown (Bia-po). Sc. 21; V. 180; C. 53. The dark stripes present, as in the preceding, but crossed by 14 black bars formed of four spots, the middle pair of which are largest and confluent; belly yellow, immaculate.

49. **Simotes violaceus**, Cant.

Yado, District of the Karin Bia-po, Thao.

♂. V. 177, 176, 170; C. 41, 39, 38. Uniform brown above, yellowish or orange beneath, uniform or with a few blackish spots on the posterior half of the body.

♀. V. 183; C. 33. Uniform brown above, orange (red?) below, checkered with black.

Half-grown. V. 175; C. 40. Brown above, with 35 narrow black cross-lines on the middle of the back; uniform yellow beneath.

50. **Simotes cruentatus**, Gthr.

Taykkyi (Pegu). ♀. V. 173; C. 27. Palon. Yg. V. 168; C. 32.

51. **Ablabes stoliczkae**, W. Sclater.

Journ. As. Soc. Beng. Lx. 1891, p. 234, pl. VI, fig. 1.

District of the Karin Bia-po.

A single male specimen, measuring 600 millim., the tail 255. Ventrals 150; subcaudals 134.

I was entirely mistaken in referring this Snake to *A. frenatus* (Zool. Rec. 1891, Rept. p. 11). The specimen now before me, which agrees in every essential point with M.r W. Sclater's excellent description, drawn up from two specimens, one of which is from the Naga hills of Assam, represents a species intermediate between *A. tricolor*, Schleg., and *A. frenatus*, Gthr. The snout is long and much depressed as in the former species, which differs in the absence of a loreal shield.

52. **Coluber porphyraceus**, Cant.

District of the Karin Bia-po.

53. **Coluber radiatus**, Schlg.

Malewoon, District of the Karin Bia-po.

54. **Coluber prasinus**, Blyth (*gramineus*, Gthr.)

District of the Karin Bia-po, Thao.

55. **Dendrophis pictus**, Gm.

Malewoon, Chialla, Thao.

56. **Dipsas cynodon**, Cuv.

Palon.

M.r W. L. Sclater has pointed out (Journ. As. Soc. Beng. Lx. 1891, p. 244) that this Snake is found in Burma and Assam. The British Museum has received a fine specimen from Toungoo, presented by M.r E. W. Oates.

57. **Dipsas cyanea**, D. & B.

Palon.

Recorded from Tavoy, Tenasserim, by M.r W. L. Sclater (l. c. p. 244).

58. **Psammodynastes pulverulentus**, Boie.

Palon, District of the Karin Bia-po, Thao.

59. **Dryophis prasinus**, Boie.

District of the Karin Bia-po.

60. **Chrysopelea ornata**, Shaw.

Malewoon.

61. **Homalopsis buccata**, L.

Rangoon.

62. **Callophis macclellandii**, Reinh.

District of the Karin Bia-po. A single specimen.

Ventrals 200, subcaudals 31. Four lower labials in contact with the anterior chin-shields. Red above, yellow beneath, with 23 complete annuli on the body, which are narrowly edged with yellow on the back; a large black blotch on the ventrals between each pair of rings. Two large transverse black blotches on the head, the anterior extending as far back as the posterior border of the eyes, the other on the occiput and nape; the end of the snout and the space between the black blotches yellow.

63. **Adeniophis bivirgatus**, Boie (*flaviceps* Cant.).

Rangoon.

This well-known Malay Snake is an addition to the Burmese Fauna.

64. **Bungarus caeruleus**, Schn.

District of the Karin Bia-po.

An exceptionally large specimen, measuring 4 feet 2 inches.

65. **Naia tripudians**, Merr.

Malewoon.

66. **Naia bungarus**, Schlg. (*Ophiophagus elaps*, Gthr.)

District of the Karin Bia-po.

67. **Hydrophis gracilis**, Shaw.

Malewoon.

Viperidae.

68. **Trimeresurus monticola**, Gray.

District of the Karin Bia-po. A single specimen.

Scales feebly keeled, in 25 row. Ventrals 146; subcaudals 40.

69. **Trimeresurus gramineus**, Shaw.

Palon, District of the Karin Bia-po, Yado, Thao.

The temporal scales may be obtusely keeled, as in *T. anamallensis*.

BATRACHIA.

ECAUDATA.

Ranidae.

1. **Oxyglossus lima**, Gravh.

Palon.

2. **Oxyglossus laevis**, Gthr.

Palon.

3. **Rana kuhlii**, D. & B.

Yado, Thao, District of the Karin Bia-po.

4. **Rana doriae**, Blgr.

(*Pl.* VIII, *fig.* 1).

Palon; Karin Hills, 1300-1600 feet; District of the Karin Bia-po.

Fully developed males differ widely from the females, figured in these 'Annali' (2.d ser.. vol. V. 1887, pl. III, fig. 1). As in the male of *Rana kuhlii* the head is very large; strong swellings are formed on the lower surface of the mandible and on each side of the occiput by the extraordinary development

of the masseteric and depressor muscles. Interorbital region very convex, the swelling produced posteriorly as in *Pelobates fuscus*, the frontoparietal bones being raised in their anterior half, rugose though free from the skin, and furnished with three strong longitudinal ridges; these ridges taper to a single one on the back part of the bones. Lower jaw with a pair of tooth-like processes in front. Tympanum quite as large as or even larger than the eye. Throat spotted or marbled with brown or black. No vocal sacs; no thickening of the inner digit.

The following measurements are taken from what I regard as perfectly adult male and female.

		♂	♀
From snout to vent	millim.	57	55
Head	»	24	20
Width of head	»	26	21
Diameter of eye	»	7	6
Diameter of tympanum . . .	»	7	4
Fore limb	»	31	29
Hind limb	»	85	86
Tibia	»	28	28
Foot	»	27	27
First toe	»	6	6
Inner metatarsal tubercle . .	»	4	4

5. **Rana limborgii.**

W. Sclater, Proc. Zool. Soc. 1892, p. 344, pl. XXIV, fig. 3.

(*Pl.* X, *fig.* 1).

District of the Karin Bia-po, 4 specimens; Yado, 1; Thao, 1.

The specimens obtained by M.r Fea enable me to supplement the recent description of this species, based on a single young specimen preserved in the Calcutta Museum.

Vomerine teeth in two oblique oval groups commencing on a line with the hinder border of the choanae. Head moderate, larger in the male, which has anterior tooth-like processes in

the lower jaw. Snout short, rounded, about as long as the diameter of the orbit; canthus rostralis obtuse; loreal region slightly concave; nostril equidistant from the orbit and the end of the snout; interorbital space as broad as, or broader than the upper eyelid; tympanum distinct, about two thirds to three fourths the diameter of the eye. Fingers rather short, the tips dilated into small disks; first finger extending slightly beyond second; toes rather short, one third webbed, the tips dilated into small but very distinct disks; subarticular tubercles moderate; a large, very prominent, compressed, blunt-edged inner metatarsal tubercle, its length about three fourths the length of the inner toe (measured from the tubercle); no outer metatarsal tubercle; a mere trace of a tarsal fold. Tibio-tarsal articulation reaching between the eye and the tip of the snout. Skin smooth, with faint traces of a glandular lateral fold; a strong fold from the eye to the shoulder. Pale brown above, with small darker spots; a dark cross-bar between the eyes and a Λ-shaped mark between the shoulders; a blackish streak on each side of the head, passing through the eye; lips with dark brown vertical bars; a yellowish vertebral stripe may be present; limbs with rather irregular dark cross-bands; lower parts white. Male with much developed internal vocal sacs, indicated externally by strong folds on each side of the throat; no thickening of the inner finger.

		♂	♀
From snout to vent	millim.	37	33
Head	»	14	12
Width of head	»	15	12
Diameter of eye	»	4	4
Diameter of tympanum	»	3	2.5
Fore limb	»	18	17
Hind limb	»	58	52
Tibia	»	18	17
Foot	»	18	17
First toe	»	4	4
Inner metatarsal tubercle	»	3	3

This diminutive species of the *macrodon* group is closely allied to *R. doriae*, but easily distinguished by the shortly webbed toes, the larger and more prominent metatarsal tubercle, and the presence of vocal sacs in the male.

6. **Rana macrodon**, D. & B.

Karin Hills, 1300-1600 feet.

7. **Rana tigrina**, Daud.

Palon.

8. **Rana limnocharis**, Wiegm. (*gracilis*, Wiegm.).

Palon, Rangoon, Malewoon, District of the Karin Bia-po, Yado, Thao, Chialla.

In some of the specimens the toes are two thirds webbed.

9. **Rana tenasserimensis.**

W. Sclater, Proc. Zool. Soc. 1892, p. 345, pl. XXIV, fig. 4.

District of the Karin Bia-po.

A single specimen, 20 millim. long from snout to vent. It agrees entirely with M.r Sclater's description and with one of the type specimens, obtained in exchange from the Calcutta Museum. Vomerine teeth are absent.

10. **Rana guentheri.**

Bouleng. Cat. Batr. Ecaud. p. 48, pl. IV, fig. 2 (1882); Boettg. Ber. Offenb. Ver. Nat. 1888, p. 95.

Yado, Thao.

This frog was known from a few specimens from S. China (Amoy, Hong Kong, Canton), either females or young. Males were fortunately obtained at Yado and Thao. The vocal sacs are internal and the fore limbs stout, as in *Rana temporaria*,

the inner side of the fore-arm furnished with a strong roundish or oval swelling; the inner finger is also strongly swollen on the inner side, as in *R. temporaria*. The glandular lateral fold, although rather narrow, is very prominent, and broken up on the iliac region. The digits end in very feebly developed expansions, which are about as much developed as in *R. macrodactyla*. The tibio-tarsal articulation reaches the tip of the snout. In two of the specimens, the vomerine teeth form two oblique series beginning in the middle between the choanae and extending posteriorly considerably beyond the level of the latter. The largest female specimen measures 78 millim. from snout to vent, the largest male 60. This species may be regarded as connecting the group „ *Ranae temporariae*" with the „ *Hyloranae.*"

11. **Rana lateralis**, Blgr.

Palon, 2 specimens. Rangoon 1.

I should have regarded the above specimens as identical with Stoliczka's Moulmein *Hylorana tytleri* (Journ. As. Soc. Beng. XXXIX, 1870, p. 148, pl. IX, fig. 1) but for his statement that the web reaches to the tip of the third and fifth toe; the more so as they show a rudimentary outer metatarsal tubercle indicated by a light dot. But M.r W. L. Sclater has lately examined the type specimen of Theobald's *Hylorana tytleri* and finds it to agree with *Rana erythraea;* he further thinks that the species named by me *Rana tytleri* in the „Fauna of India" should be designated as *R. nigrovittata,* Blyth, on which point he is however mistaken.

12. **Rana macrodactyla**, Gthr.

Rangoon.

13. **Rana erythraea**, Schlg.

Malewoon.

14. Rana granulosa.

Hylorana granulosa, Anders. Journ. As. Soc. Beng. xL. 1871, p. 23.
Rana granulosa, W. Sclater, Proc. Zool. Soc. 1892, p. 346.

(*Pl.* VIII, *fig.* 2).

Palon, one specimen. District of the Karin Bia-po, five specimens.

Vomerine teeth in two transverse or oblique series between the choanae, sometimes extending a little beyond the level of the posterior borders of the latter. Head as long as broad; snout rounded or obtusely pointed and prominent, as long as or slightly longer than the diameter of the orbit; loreal region deeply concave; canthus rostralis obtuse; nostril a little nearer the end of the snout than the eye; interorbital space nearly as broad as the upper eyelid; tympanum very distinct, as large as or a little smaller than the eye. Fingers swollen at the tips, with very strong subarticular tubercles; first finger much longer than second. Toes half or two thirds webbed, the web not quite reaching the disks of the third and fifth; disks small, somewhat more developed than on the fingers; subarticular tubercles strong; inner metatarsal tubercle oval, blunt, about one third the length of the first toe; a very prominent, round outer metatarsal tubercle. Tibio-tarsal articulation reaching the eye, or between the latter and the nostril. Skin strongly granular on the head and back; a strong and broad glandular lateral fold, as in *R. erythraea*. Brown above, with numerous black spots or marblings; canthus rostralis, upper lip, and glandular lateral fold whitish and black-edged; tympanum reddish-brown; limbs with black cross-bars; hinder side of thighs marbled black and white; lower parts white, spotted or marbled with brown. Male with a large, greyish, external vocal sac on each side below the mandible, extending from below the centre of the eye to the fore limb; a humeral gland.

From snout to vent, ♂ 62, ♀ 68 millim.

Very closely allied to *R. erythraea*, *humeralis* and *oatesii*.

15. Rana nigrovittata.

Limnodytes nigrovittatus, Blyth, Journ. As. Soc. Beng. XXIV, 1855, p. 718.

(*Pl.* VIII, *fig.* 3).

Yado, 2 specimens. District of the Karin Bia-po, 1.

Vomerine teeth in two oblique groups on a level with or just behind the posterior borders of the choanae. Head as long as broad or a little broader than long; snout rounded, feebly prominent, shorter than the diameter of the orbit; loreal region nearly vertical, slightly concave; canthus rostralis strong; nostril nearer the end of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum very distinct, three fourths or four fifths the diameter of the eye. Fingers ending in small but very distinct disks; subarticular tubercles strong; first finger extending beyond second. Toes nearly entirely webbed, the web reaching the disks of the third and fifth; disks as much developed as those of the fingers; subarticular tubercles strong; inner metatarsal tubercle oval, blunt, one third or one fourth the length of the first toe; a very prominent, round outer metatarsal tubercle. The tibio-tarsal articulation reaches the nostril or the tip of the snout. Skin more or less distinctly granulate on the head and back; a broad but feebly prominent glandular lateral fold. Brown above, uniform or with a few small darker spots; a blackish stripe on each side, from the tip of the snout to the groin, passing through the eye, involving the tympanum, and bordering the dorso-lateral fold; a white streak from below the eye to the shoulder; flanks spotted with black; limbs with dark cross-bars; hinder side of thighs spotted or marbled with black; lower parts whitish, throat and breast more or less obscured with brown mottlings. Male with internal vocal sacs and a humeral gland.

From snout to vent, ♂ 48, ♀ 51 millim.

The short snout, the longer inner finger, and the broader dorso-lateral fold easily distinguish this species from *R. alticola*

with which it has been confounded by M.r W. L. Sclater. One of Blyth's type specimens, obtained in Mergui by M.r Theobald, is now preserved in the British Museum.

16. Rana jerboa.

Hylorana jerboa, Günth. Proc. Zool. Soc. 1872, p. 599, pl. xL.
Rana jerboa, Bouleng. Cat. Batr. Ecaud., p. 67 (1882) and Proc. Zool. Soc. 1892, p. 507.
Rana masonii, Bouleng. Ann. and Mag. N. H. (5) XIII, 1884, p. 397; Boettg. Ber. Offenb. Ver. Nat. 1892, p. 138.

Thao: 4 specimens. District of the Karin Bia-po: 3 specimens.

This addition to the Burmese fauna throws fresh light on the question of the specific distinctness of the Javan *R. masonii* from *R. jerboa*, which has recently been raised by Boettger. The result is shown by the above synonymy.

The fine specimens obtained by M.r Fea show the characters upon which I had relied in separating the above named supposed species to be merely individual, with the exception, however, of the choanae, which are considerably larger in the specimens referred to the typical *R. jerboa* (Matang and M.t Dulit) than in those from Java and the Karin Hills. The vomerine teeth may be situated either between the choanae, or just behind the level of their posterior borders; the length of the tibia varies from two thirds to four fifths the length of head and body, and the femoro- tibial articulation reaches the arm-pit, the tympanum, or between these two points.

The following description is taken from M.r Fea's specimens:

Vomerine teeth in two short, transverse or oblique series; in the male specimen and in two young females, these series are situated in the middle between the choanae; in two adult and one young female they may be said to be on a level with the posterior borders of the choanae, beyond which they extend; whilst in the seventh specimen, which is a large female, the teeth are entirely behind the level of the choanae. Choanae moderately large, much smaller than the eustachian tubes. Head as long as broad in the large specimens, a little longer than

broad in the small ones; snout obtuse or pointed, as long as or a little longer than the diameter of the orbit; loreal region oblique, concave; canthus rostralis distinct; nostril equally distant from the eye and the end of the snout; interorbital space as broad as or a little narrower than the upper eyelid; tympanum very distinct, nearly as large as the eye and close to it in the male, one half to two thirds the diameter of the eye in the female. Fore limb a little shorter than the tibia; fingers rather slender, first extending as far as second or a little beyond, with small but well developed disks. Hind limb very long; femoro-tibial articulation reaching the axil, the shoulder, or the tympanum; tibia longer than femur, two thirds to three fourths length of head and body; toes webbed to the disks, which are a little larger than those of the fingers; subarticular tubercles strong; inner metatarsal tubercle feebly prominent, elliptic, one third to two fifths the length of the inner toe; no outer metatarsal tubercle. Skin smooth; dorso-lateral glandular fold narrow, more or less prominent, continuous. Brown or greyish above, uniform or marbled with darker; sides of head and body dark; in some specimen a black stripe under the canthus rostralis and the dorso-lateral fold; limbs with very indistinct dark cross bands; hinder side of thighs speckled or closely vermiculate with dark brown; lower parts white; the throat may be speckled with brown.

		♂	♀	♀	♀	♀
From snout to vent . .	millim.	51	102	98	88	47
Hind limb	»	110	206	194	193	105
Femur	»	31	57	58	58	30
Tibia	»	37	67	66	64	36
Diameter of eye	»	6	11	10	10	5.5
Diameter of tympanum .	»	5	6	6	5.5	4

17. **Rana livida**, Blyth.

Karin Hills, 1300-1600 feet, Yado, Bia-po.

18. **Rana latopalmata**, Blgr. (*afghana*, Gthr.).

District of the Karin Bia-po , Thao.

In the males, which do not exceed a length of 46 millim. from snout to vent, the vocal sacs are external, situated on each side of the throat below the mandible, and extending from below the centre of the eye to the fore limb; inner side of first finger strongly swollen. The largest female measures 88 millim. from snout to vent.

19. **Rhacophorus leucomystax**, Gravh.

Rangoon, Malewoon, Yado, Thao.

20. **Rhacophorus verrucosus**, sp. n.

(*Pl.* X, *fig.* 2).

Thao. Three specimens.

Vomerine teeth in two short oblique series touching the inner front edge of the choanae. Snout rounded or somewhat pointed, as long as the diameter of the orbit; canthus rostralis obtuse; loreal region concave; nostril nearer the end of the snout than the eye; interorbital space as broad as the upper eyelid; tympanum very distinct, half the diameter of the eye. Fingers webbed at the base, the disks nearly as large as the tympanum; toes nearly entirely webbed, the disks a little smaller than those of the fingers; subarticular tubercles of fingers and toes well developed, single; a small inner metatarsal tubercle. Tibiotarsal articulation reaching between the eye and the nostril. Head and back rough with small warts; belly granulate; some enlarged, white tubercles below the vent; a row of warts forms a fringe along the outer edge of the fore-arm and tarsus. Grey or brown above, marbled with darker; limbs with irregular dark cross-bars; throat, belly, and lower surface of fore limbs

white, with scattered brown or black spots; sides of thighs and lower surface of hind limbs bright yellow.

From snout to vent 41 millim.

This frog bears some resemblance to *R. appendiculatus*, Gthr., from the Philippines and Borneo, which differs in the more developed web between the fingers, the double subarticular tubercles of the fingers, and the longer hind limbs.

21. **Rhacophorus feae**, sp. n.

(*Pl.* IX).

Thao. Three specimens.

Vomerine teeth in two transverse or slightly oblique series, close to and on a level with the anterior inner edge of the choanae. Snout rounded, as long as the diameter of the orbit; canthus rostralis well marked; loreal region concave; nostril nearer the end of the snout than the eye; interorbital space broader than the upper eyelid; tympanum very distinct, two thirds the diameter of the eye. Fingers nearly entirely webbed, with very large disks, that of the fourth nearly as large as the eye; toes entirely webbed; subarticular tubercles well developed, very prominent; inner metatarsal tubercle very small, oval, flat, feebly prominent, one third the length of the inner toe. The tibio-tarsal articulation reaches the eye, or between the eye and the nostril. Skin smooth or finely granulate above; a strong fold from behind the eye to above the shoulder; belly and lower surface of thighs with small granules intermixed with larger ones. Green above, with small golden spots on the back; a golden streak on each side from the tip of the snout to the shoulder, on the canthus rostralis, the outer moiety of the upper eyelid, and the glandular supratemporal fold; interdigital webs yellow; throat purplish, with a white labial border; breast, belly, and lower surface of limbs white. Male with an internal vocal sac.

From snout to vent 125 millim.

This species, the largest yet known of the genus *Rhacophorus*, is closely allied to *R. maximus*, Gthr., from which it differs in the weaker metatarsal tubercle, the larger disks of the fingers, and the coloration.

22. **Rhacophorus bimaculatus**, Blgr.

District of the Karin Bia-po.

23. **Ixalus carinensis**, sp. n.

(*Pl.* X, *fig.* 3)

Karin Hills, 2900-3500 feet: One specimen. Thao: One specimen. District of the Karin Bia-po: Five specimens.

Snout rounded, a little shorter than the diameter of the orbit; canthus rostralis distinct; loreal region concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers with a slight rudiment of web; toes three-fourths webbed; disks well developed; a very small inner metatarsal tubercle. The tibio-tarsal articulation reaches the eye, or between the eye and the nostril. Skin smooth or with small warts on the head and the anterior part of the back; a fold from the eye to the shoulder; throat, belly, and lower surface of thighs granulate. Purplish, reddish, or greyish brown above, with darker spots and usually two more or less distinct curved dark brown bands on the back forming an)(, which may be connected with an interocular cross-bar; limbs with more or less distinct dark cross-bars; lower parts white. Male with an internal vocal sac.

From snout to vent 38 millim.

24. **Ixalus parvulus**, sp. n.

(*Pl.* X, *fig.* 4).

District of the Karin Bia-po: Seven specimens.

Snout rounded, a little shorter than the diameter of the orbit; canthus rostralis indistinct; loreal region concave; nostril equally

distant from the eye and the tip of the snout; interorbital space broader than the upper eyelid; tympanum hidden. Fingers short, free; disks large; toes short, webbed at the base; a small inner metatarsal tubercle. The tibio-tarsal articulation reaches the posterior border of the eye. Skin smooth above, or with small, scattered, conical warts; a more or less distinct glandular fold from the eye to the shoulder; throat smooth; belly and lower surface of thighs granular. Greyish or brown above, uniform or with a dark bar or triangular blotch between the eyes, and a curved dark band along each side of the back; lumbar region with dark brown marblings enclosing a more or less distinct whitish blotch; a more or less distinct dark bar across the femur and one or two across the tibia; lower parts brown, or whitish much obscured by brown mottlings. Male with a very large external vocal sac.

From snout to vent 23 millim.

25. **Ixalus vittatus**, Blgr.

Palon.

26. **Ixalus asper**, Blgr.

Thao. Two specimens.

This species, described by me (P. Z. S. 1886, p. 415, pl. XXXIX, fig. 1) from specimens obtained at Larut, Perak, 3300 feet, has quite recently been recorded by M.r W. L. Sclater (P. Z. S. 1892, p. 347) from hills between Burma and Siam.

CHIRIXALUS g. n.

Pupil horizontal. Tongue free and deeply notched behind. Vomerine teeth none. Tympanum distinct. Fingers webbed at the base, the two inner opposed to the two outer; toes webbed; tips of fingers and toes dilated into large disks. Outer metatarsals separated by web. Omosternum and sternum with a bony style. Terminal phalanges obtuse; an intercalary ossification between the two distal phalanges.

This genus stands in the same relation to *Ixalus* as *Chiromantis* to *Rhacophorus*.

27. **Chirixalus doriae**, sp. n.

(*Pl.* X, *fig.* 5).

District of the Karin Bia-po: five specimens; Thao: one specimen.

Snout rounded or obtusely pointed, shorter than the diameter of the orbit; canthus rostralis obtuse; loreal region nearly vertical, concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid; tympanum half the diameter of the eye. Inner fingers webbed at the base, outer one third webbed; toes two thirds webbed; disks of fingers as large as the tympanum, of toes smaller; subarticular tubercles well developed; a small inner metatarsal tubercle. The tibio-tarsal articulation reaches the eye, or between the eye and the nostril. Skin smooth, finely granular on the throat, coarsely on the belly and under the thighs. Yellowish or purplish-grey above, uniform or with small blackish spots and three dark stripes along the head and back; lower parts white. Male with an internal vocal sac.

From snout to vent 34 millim.

PHRYNODERMA, g. n.

Pupil horizontal. Tongue oval, free and very feebly nicked behind. Vomerine teeth none. Tympanum distinct. Fingers and toes webbed, the tips dilated into large disks. Outer metatarsals separated by web. Omosternum and sternum with a bony style. Terminal phalanges bifurcate; an intercalary ossification between the two distal phalanges.

The new frog for which this genus is established is Ranoid in structure and bears considerable resemblance to *Rhacophorus leprosus*, Tsch. But the shape of the tongue and the absence of vomerine teeth necessitate the establishment of a new genus.

28. **Phrynoderma asperum**, sp. n.

(*Pl.* XI, *fig.* 1)

Thao: two specimens.

Snout shorter than the diameter of the orbit, projecting, squarely truncate at the end; canthus rostralis obtuse; loreal region concave; nostril quite at the tip of the snout; interorbital space a little broader than the upper eyelid; tympanum very distinct, as large as the eye. Fingers stout, much flattened, half webbed, with very large disks which are not much smaller than the eye; toes entirely webbed, the disks smaller than those of the fingers; subarticular tubercles of fingers and toes very indistinct; a small, feebly prominent inner metatarsal tubercle. The tibio-tarsal articulation reaches between the eye and the tip of the snout. Upper parts covered with rough warts studded with hard granules; lower parts smooth. Dark olive-grey above, the granules on the warts whitish; limbs with black cross-bars; lower parts blackish brown with whitish dots.

From snout to vent 45 millim.

Engystomatidae.

29. **Calophrynus pleurostigma**, Tsch.

Palon.

30. **Microhyla inornata**, Blgr.

Palon.

This small frog was described three years ago (P. Z. S. 1890, p. 37) from specimens obtained by Prof. Moesch near Deli, Western Sumatra.

31. **Microhyla ornata**, D. & B.

Palon. District of the Karin Bia-po.

32. **Microhyla berdmorii**, Blyth.

District of the Karin Bia-po.

33. **Callula pulchra**, Gray.

Rangoon, Palon.

Bufonidae.

34. **Bufo macrotis**, Blgr.

Palon.

35. **Bufo melanostictus**, Schn.

Rangoon, Palon, Malewoon, District of the Karin Bia-po.

36. **Bufo parvus**, Blgr.

Malewoon.

Originally described from Malacca (Ann. & Mag. N. H. 5, XIX, 1887, p. 346, pl. X, fig. 3), this species has since been recorded from Sumatra (Proc. Zool. Soc. 1890, p. 37).

37. **Bufo asper**, Gravh.

Karin Hills, 1300-1600 feet.

Hylidae.

38. **Hyla annectens**, Jerd.

Thao.

Pelobatidae.

39. **Leptobrachium monticola**, Gthr.

Thao, District of the Karin Bia-po.

40. **Leptobrachium parvum**, sp. n.

(*Pl.* XI, *fig.* 2).

District of the Karin Bia-po, Yado. Five specimens.

Closely allied to *L. monticola*, with which it agrees in the vomerine dentition, the angular and prominent snout, the swollen ends of the digits, the rudimentary web between the toes, the symetrical muciferous ridges on the head and back (the persistent "lateral lines" so much developed in Pelobatoid larvae), and in coloration. But it differs in the much smaller size; the shorter snout, the distance between the tip of the snout and the orbit being considerably less than the diameter of the orbit; the tympanum, about three fifths to two thirds the diameter of the eye, equalling or even exceeding its distance from the orbit; the shorter hind limbs, the tibio-tarsal articulation reaching the tympanum in the females, the posterior border of the eye in the male; and the shorter toes. The length of the tibia is considerably less than half the distance between end of snout and vent.

The following table of measurements, taken from adult specimens of *L. monticola* and *L. parvum* from the same district, well shows the differences on which the new species is founded:

		L. monticola		*L. parvum*	
		♂	♀	♂	♀
From snout to vent	millim.	76	105	37	42
Length of head	»	21	26	10	11
Width of head	»	27	34	12	14
From end of snout to orbit	»	9	12	4	5
Diameter of orbit	»	9	12	5	6
Interorbital space	»	8	10	4	4 ½
Diameter of tympanum	»	4	5	2 ½	3 ½
Distance between orbit and tympanum	»	6	7	2 ½	2 ½
Fore limb	»	45	54	24	26
Hind limb	»	130	150	52	56
Tibia	»	40	48	16	18
Foot	»	35	40	15	16

41. **Leptobrachium pelodytoides**, sp. n.

(*Pl.* XI, *fig.* 3).

Thao, 2 specimens. District of the Karin Bia-po, one specimen.

Tongue large, notched behind. Vomerine teeth none. Head moderate, as long as broad or a little broader than long; snout rounded, shorter than the diameter of the orbit; canthus rostralis distinct; loreal region concave; interorbital space as broad as the upper eyelid; tympanum distinct, half or three fifths the diameter of the eye. Fingers moderate, first and second equal; toes moderate, one third webbed; tips of fingers and toes slightly swollen; subarticular tubercles indistinct; a small, oval inner metatarsal tubercle. The tibio-tarsal articulation reaches the eye, or between the eye and the nostril. Upper parts with small smooth warts, lower parts smooth. Olive above, spotted or marbled with darker; limbs with dark cross-bars; a round, white, dark-edged spot on the back of the thighs, nearer the tibia than the vent; white beneath, throat of male brown. Male with an internal subgular vocal sac.

From snout to vent 37 millim.

This species is intermediate between *L. gracile* and *L. hasseltii*.

42. **Leptobrachium hasseltii**, Tsch.

District of the Karin Bia-po.

43. **Leptobrachium carinense**, Blgr.

(*Pl.* XII).

Western slopes of the Karin Hills.

I have described this species in these Annals in 1889 (VII, p. 748). M.r W. Sclater has since (P. Z. S. 1892, p. 347) recorded a specimen with vomerine teeth between the choanae.

Out of several specimens lately submitted to me by Sig. Fea, two are provided with vomerine teeth.

APODA.

Caeciliidae.

44. Ichthyophis glutinosus, L.

District of the Karin Bia-po.

EXPLANATION OF THE PLATES.

VII.

Fig. 1. *Gymnodactylus feae,* Blgr.
» 1 *a*. Chin.
» 1 *b*. Anal region and lower view of hind limb, × 2.
» 1 *c*. Lower view of fourth toe, × 4.
» 2. *Gymnodactylus peguensis,* Blgr.
» 2 *a*. Chin.
» 2 *b*. Anal region and lower view of hind limb, × 2.
» 2 *c*. Lower view of fourth toe, × 4.

VIII.

Fig. 1. *Rana doriae,* Blgr., male.
» 1 *a*. Side view of head.
» 1 *b*. Lower view of head.
» 2. *Rana granulosa,* And., female.
» 2 *a*. Vomerine dentition.
» 3. *Rana nigrovittata,* Blyth, male.
» 3 *a*. Vomerine dentition.

IX.

Rhacophorus feae, Blgr., female.

X.

Fig. 1. *Rana limborgii,* W. Sclater, male.
» 1. *a* Lower view of head.
» 2. *Rhacophorus verrucosus,* Blgr., female.
» 3. *Ixalus carinensis,* Blgr., male.
» 4. *Ixalus parvulus,* Blgr., female.
» 5. *Chirixalus doriae,* Blgr., female.
» 5 *a.* Enlarged view of hand.

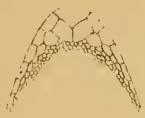
XI.

Fig. 1. *Phrynoderma asperum,* Blgr., female.
» 1 *a.* Side view of head.
» 1 *b.* Open mouth.
» 2. *Leptobrachium parvum,* Blgr., female.
» 2. *a.* Side view of head.
» 3. *Leptobrachium pelodytoides,* Blgr., female.
» 3 *a.* Side view of head.

XII.

Leptobrachium carinense, Blgr., male.

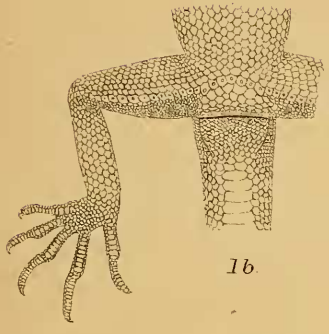
1c.



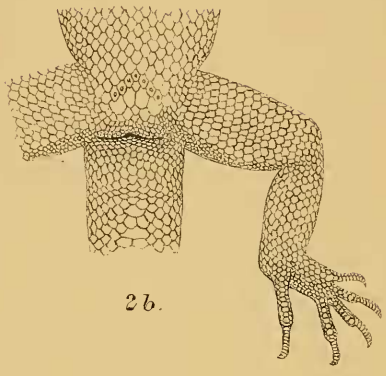
1a

2a

2c.

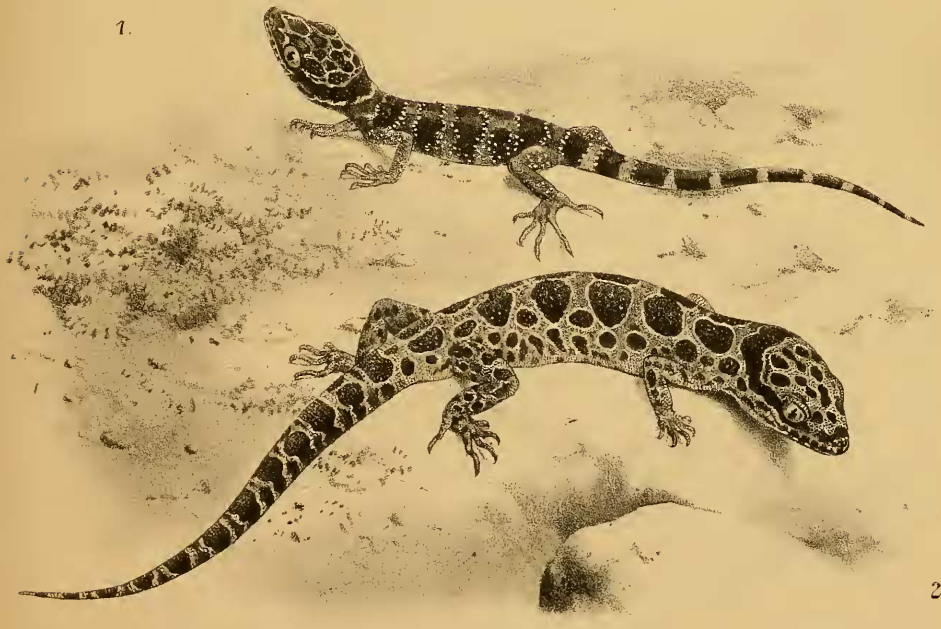


1b



2b.

1.



2

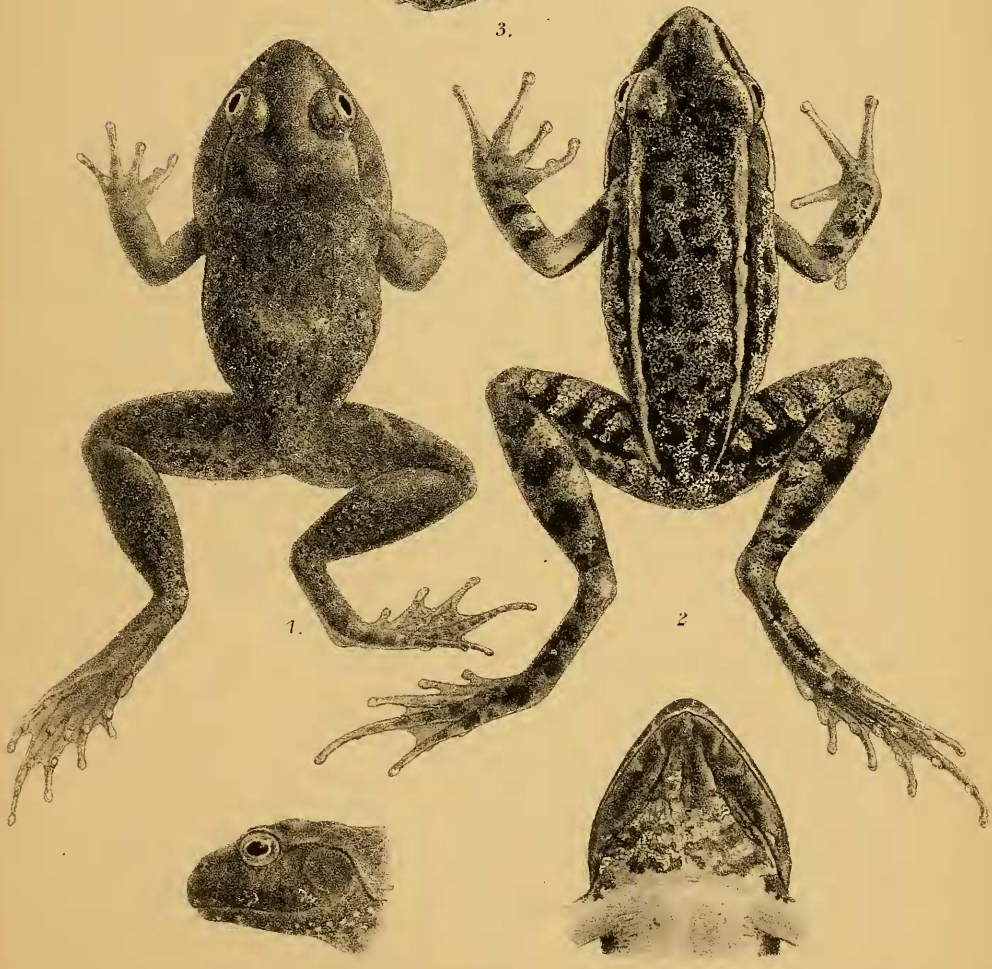
Peter Smit del. et lith. Mintern Bros. imp.

1. Gymnodactylus feæ. 2. Gymnodactylus peguensis.

3a.

2a.

3.



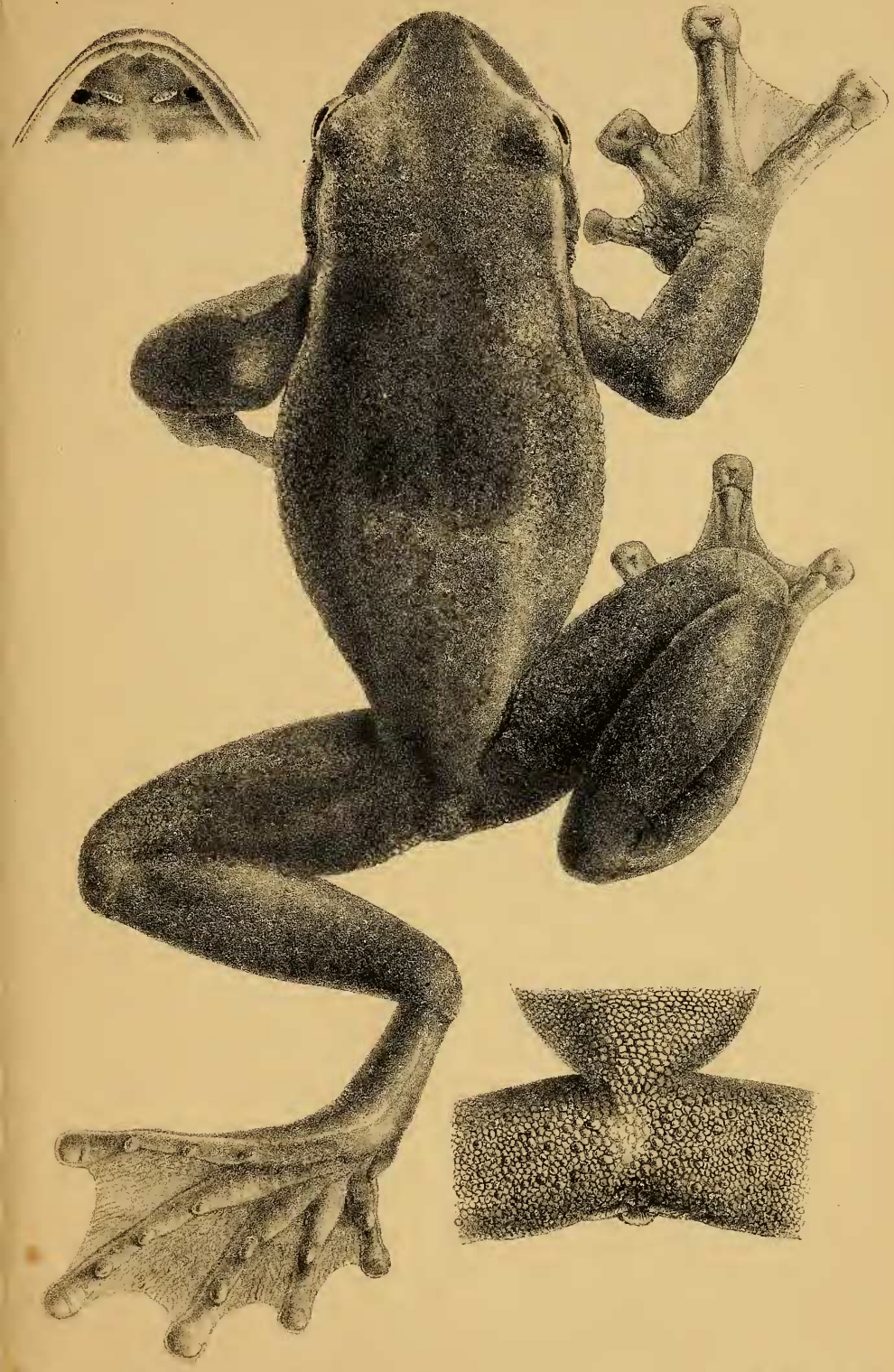
1. 2

1a

1b

Peter Smit del. et lith. Mintern Bros. imp.

1. Rana doriæ 2. Rana granulata.
3. Rana nigrovittata.



Peter Smit del. et lith. Mintern Bros. imp.

Rhacophorus feæ.

4.

5.

1a.

2.

5 a.

1.

3

Peter Smit del. et lith. Mintern Bros. imp.

1. Rana limborgii. 2. Rhacophorus verrucosus.
3. Ixalus carinensis. 4. Ixalus parvulus. 5. Chirixalus doriæ.

Peter Smit del. et lith. Mintern Bros. imp.

1. Phrynoderma asperum.
2. Leptobrachium parvum. *3. Leptobrachium pelodytoides.*

Peter Smit del. et lith. Mintern Bros. imp.

Leptobrachium carinense.